BISS Biodiversity Information Science and Standards

Biodiversity Information Science and Standards 3: e37441
doi: 10.3897/biss.3.37441

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Conference Abstract

Towards an Integrated Biodiversity Technology Program Supporting Transparent Decision Making in Australia

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Received: 18 Jun 2019 | Published: 26 Jun 2019

Citation: Huijbers C, Richmond S, Belbin L, Holewa H (2019) Towards an Integrated Biodiversity Technology Program Supporting Transparent Decision Making in Australia. Biodiversity Information Science and Standards 3: e37441. https://doi.org/10.3897/biss.3.37441

Abstract

Effective management of our natural world under current and future conditions requires efficient, collaborative and complementary planning and decision-making processes with clear lines of accountability. While there has been significant progress in establishing national databases for the management of species observation data, these only represent samples of a species' total distribution. The need and challenge therefore is to model these point-based observation data to obtain estimates or projections of the total range and distribution of the species. Such Species Distribution Models (SDMs), also known as Environmental Niche Models (ENMs), and the geographic data (or “maps”) they generate, provide vital information needed by governments at all levels to meet various policy and statutory responsibilities and obligations. SDMs quantify the response of species occurrence to environmental conditions described by variables such as climate, substrate, productivity and vegetation. The outcomes of an SDM can be used to identify locations and regions with potentially suitable environmental conditions for a species, as well as assess how species may respond to projected future climate changes or habitat loss. While SDMs are widely used in many decision- and policy-making programs, investment in species distribution information has been fragmented and limited.

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In Australia, three different government departments joined forces with the Atlas of Living Australia and the Biodiversity and Climate Change Virtual Laboratory to develop a standard framework for modelling threatened species distributions for use in policy and environmental decision-making. The pilot program that will be conducted throughout 2019 includes three complementary pillars:

- An expert panel with both researchers and government practitioners who will review current SDM practices used in government and develop a set of best-practice methods.
- A technology program that includes the development of a new modelling platform that implements the best-practice methods for transparent and reproducible SDMs for decision making as established by the expert panel. Additionally, there will be an online portal for publishing ecological model outputs in a searchable catalogue to enhance cross-jurisdiction collaborations.
- Establishment of a training and skill development program to upskill decision makers using the new tools and methodology in practice.

This presentation will showcase the outcomes of this program and highlight how digital infrastructure can enhance decision making. In this case specifically, the collaboration across government departments ensures a) a consistent approach across jurisdictions, b) an increase in model quality, thereby leading to a decrease in unnecessary survey or consultation efforts, c) an increase in suitability, robustness and reproducibility of SDMs, and d) increased advocacy and coordination in national programs and resources.

Keywords

species distribution modelling, decision making, Australia, biodiversity, government, platform, infrastructure

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Presented at

Biodiversity_Next 2019